

REMARKS

Claims 1-48 have been examined. By this amendment, Applicant is adding four new dependent claims. Claims 1-52 are pending.

1. Formalities:

Applicant thanks the Examiner for acknowledging the claim to foreign priority and for confirming that the certified copy of the priority document was received.

Applicant thanks the Examiner for initialing the Kano et al. (US 5,359,513) reference listed on form PTO 1449 submitted with the Information Disclosure Statement filed on March 27, 2001. Applicant requests that the Examiner consider and initial the Japanese Document 7-37074 reference listed on the same form.

2. Claim Rejections - 35 U.S.C. § 102:

The Examiner has rejected claims 1, 3, 7-10, 13-22, 26, 28, 32-35, and 38-48 under 35 U.S.C. § 102(e) as being anticipated by Nachtomy et al (U S 6,095,976) ["Nachtomy"]. For at least the following reasons, Applicant traverses the rejection.

Claim 1 recites an image display method comprises the steps of "performing interimage processing on two original images, constituting each of two or more pairs of original images selected from three or more original images taken of the same subject." Nachtomy discloses a process where a first image is successively transformed and compared to a baseline image (predecessor image) to assess shift (col. 10, lines 2-14). Applicant submits that the closeness

will be determined relative to a transformed image rather than an original one. Therefore, Nachtomy does not disclose or suggest the interimage processing of the claimed combination.

Additionally, Nachtomy discloses that the pullback rates on the pre-treatment and post-treatment images (pullback films) be stable and known (col. 27, lines 50-51). Because the catheter is moving at a constant pullback rate, each image within a pullback film is of a different cross-section along the blood vessel's Z-axis. Applicant submits that there is only one original image for each subject or cross-section in any given pullback film. Therefore, Nachtomy does not disclose "three or more original images taken of the same subject." (emphasis added).

For at least the reasons given above, Applicant requests that the Examiner withdraw the rejection of claim 1. Because claim 26 recites features similar to claim 1, Applicant submits that claim 26 is patentable for at least the reasons given above for claim 1.

Applicant submits that the Examiner has made an error in the rejection of claims 8, 10, 14, 17, 20, 33, 35, 39, 42, and 45. These claims are dependent claims to 2, 4, 27 or 29. Claims 2, 4, 27 and 29 were rejected under 35 U.S.C. § 103 (see below). Therefore, the Examiner cannot reject claims 8, 10, 14, 17, 20, 33, 35, 39, 42, and 45 under § 102. Applicant requests that the rejection of these claims be withdrawn.

Applicant also requests a clarification of the rejection to claim 48. The Examiner rejected claim 48 under § 102 but cited the analysis to claim 23, which was rejected under § 103.

Because claims 3, 7, 9, 13, 15, 16, 18, 19, 21, 22 are dependent claims to independent claim 1 and, claims 28, 32, 34, 38, 40, 41, 43, 44 and 46-48 are dependent claims to independent claim 26, Applicant submits that these claims are patentable at least by virtue of their

dependency to their respective base claims. These claims are further distinguished by the combinations of features not disclosed in Nachtomy.

For example, claims 7, 9, 32 and 34 recite the feature “wherein one of said two original images is selected as a reference image so that each of said interimage-processed images is generated based on said image.” Nachtomy discloses a reference group that consists of images displaying a portion of the blood vessel that will not undergo therapy and is located in both pullback films (col. 7, 57-62). These images are matched (registered) so that both pullback films can be synchronized. Applicant submits that the Examiner has misinterpreted the reference as applied to claims 7, 9, 32 and 34.

Claims 7, 9, 32, and 34 require that one of the three original images, as illustrated in the non-limiting embodiment shown in Figure 2 of the present invention, be used as a reference that is common to the two original images that generate each interimage processed image, as illustrated in the non-limiting embodiment shown in Figure 8 of the present invention. Applicant submits that the reference group disclosed by Nachtomy is only used to synchronize the two pullback films by matching the common blood vessel segments in the two films. Nachtomy does not disclose or suggest the use of this reference group to generate interimage processed images as required by these claims.

Claims 19, 21, 44 and 46 recite the feature “wherein, in said interimage processing the process of registering positions of structural elements of said two original images is first performed, and then the process of performing subtraction between corresponding pixels in said two original images is performed.”(emphasis added). Nachtomy discloses a method for closeness operation where corresponding pixels are subtracted from two images and the absolute

value of all the pixels is summed (sum of absolute differences “SAD”, col. 11, lines 58-62).

Therefore, SAD is just another method of registration (closeness operation).

Applicant submits, however, that Nachtomý does not disclose or suggest the “subtraction of corresponding pixels” after an image has been registered as required by these claims.

Therefore, Nachtomý does not teach all the elements of these claims as required.

3. Claim Rejections - 35 U.S.C. § 103

The Examiner has rejected claims 2, 4-6, 11, 12, 23-25, 27, 29-31, 36 and 37 under 35 U.S.C. § 103(a) as being unpatentable over Nachtomý as applied to claims 1 and 26, and further in view of Barni et al (U S 5,841,830) [“Barni”]. For at least the following reasons, Applicant traverses the rejection.

The Examiner alleges one of ordinary skill in the art would have made use of the alignment taught by Barni to the images of Nachtomý because Barni provides images which are generated in real time. Applicant disagrees.

Barni discloses a process where a surgical image is superimposed onto a diagnostic image to aid in surgery (col. 4, lines 39-42). Barni suggests that the diagnostic image be generated only once (or very infrequently) because of the significant dose of radiation (col. 2, lines 10-16 of Barni). Therefore, Applicant submits that the diagnostic image in Barni is a static image. To the extent any real-time characteristics may be important as the Examiner alleges, it is in the context of the static nature of Barni.

Nachtomý teaches away from the use of static images because they don’t take into account temporal behavior such as blood flow (col. 4, lines 7-12 of Nachtomý). The ability to

take into account the temporal effects is a principle object of Nachtomy which would be undermined in view of the objects in Barni. Therefore, Applicant submits that one of ordinary skill in the art would not have combined the teachings of Barni to Nachtomy because Nachtomy teaches away from the use of static images.

In addition, claims 2, 4-6, 11, 12, 23-25, 27, 29-31, 36 and 37 are dependent on either claim 1 or claim 26. Applicant submits that the deficient teachings of Nachtomy with respect to claims 1 and 26 (given above) are not cured by the application of Barni. Therefore, Applicant submits that these claims are patentable at least by virtue of their dependency to their respective base claims. These claims are further distinguished by the combinations of features not disclosed in Nachtomy in view of Barni.

For example, claims 12, 24 and 25 recite the feature “wherein each of said interimage-processed images is generated by performing said interimage processing on two of said three or more original images which are adjacent in a time series.” The Examiner alleges that Barni’s disclosure of a diagnostic image and surgical instrument images meet the requirements of these claims. Applicant submits that the diagnostic image is a static image (see analysis above) and the surgical instrument images are continuously updated every 1/12 second (col. 5, lines 23-26). Therefore, the reference image (diagnostic image) is not adjacent in time series with the surgical instrument images as required by these claims.

4. Specification:

Applicant has corrected some minor typographical errors in the specification. No new matter has been added.

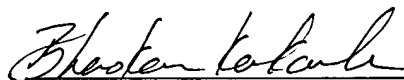
5. New Claims:

By this amendment, Applicant adds four new dependent claims in order to further define the claimed invention. Applicant submits that these claims are patentable by virtue of the features set forth therein. Favorable consideration is requested.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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